## **CLAIMS**

What is claimed is:

1. A compound having the structure I, a tautomer of the compound, a pharmaceutically acceptable salt of the compound, or a pharmaceutically acceptable salt of the tautomer

$$R^4$$
 $R^5$ 
 $R^6$ 
 $R^7$ 
 $R^7$ 
 $R^3$ 
 $R^3$ 

wherein,

Y is selected from the group consisting of –OH, -OR<sup>8</sup> groups, -SH, -SR<sup>9</sup> groups, NR<sup>10</sup>R<sup>11</sup> groups, -CN, -C(=O)-R<sup>12</sup> groups, substituted and unsubstituted alkyl groups, substituted and unsubstituted alkenyl groups, substituted and unsubstituted and unsubstituted and unsubstituted and unsubstituted heterocyclylalkyl groups, substituted and unsubstituted alkylaminoalkyl groups, substituted and unsubstituted dialkylaminoalkyl groups, substituted and unsubstituted arylaminoalkyl groups, substituted and unsubstituted diarylaminoalkyl groups, substituted and unsubstituted diarylaminoalkyl groups, substituted and unsubstituted (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted

heterocyclylaminoalkyl groups, substituted and unsubstituted diheterocyclylaminoalkyl groups, substituted and unsubstituted (alkyl)(heterocyclyl)aminoalkyl groups, substituted and unsubstituted (aryl)(heterocyclyl)aminoalkyl groups, substituted and unsubstituted heterocyclyl groups, substituted and unsubstituted aryl groups, substituted and unsubstituted and unsubstituted and unsubstituted alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl groups, and substituted and unsubstituted heterocyclyloxyalkyl groups;

Z is selected from the group consisting of O, S, and NR<sup>13</sup> groups;

R<sup>1</sup> and R<sup>2</sup> join to form 5 to 7 membered substituted or unsubstituted ring comprising at least one O, N, or S atom;

R³ and R¹³ may be the same or different and are selected from the group consisting of H, -OH, substituted and unsubstituted alkoxy groups, substituted and unsubstituted aryloxy groups, -NH², substituted and unsubstituted alkylamino groups, substituted and unsubstituted and unsubstituted and unsubstituted dialkylamino groups, substituted and unsubstituted diarylamino groups, substituted and unsubstituted (alkyl)(aryl)amino groups, substituted and unsubstituted heterocyclylamino groups, substituted and unsubstituted diheterocyclylamino groups, substituted and unsubstituted (alkyl)(heterocyclyl)amino groups, substituted and unsubstituted (aryl)(heterocyclyl)amino groups, substituted and unsubstituted heterocylyloxy groups, substituted and unsubstituted alkyl groups, substituted and unsubstituted aryl groups, -C(=O)H, -C(=O)-alkyl groups, and -C(=O)-aryl groups;

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R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, and R<sup>7</sup> may be the same or different and are independently selected from the group consisting of H, Cl, Br, F, I,  $-NO_2$ , -CN, -OH,  $-OR^{14}$  groups,  $-NR^{15}R^{16}$  groups,  $-C(=O)R^{17}$ groups, -SH, -SR<sup>18</sup> groups, -S(=O) $R^{19}$  groups, S(=O)<sub>2</sub>R<sup>20</sup> groups, substituted and unsubstituted amidityl groups, substituted and unsubstituted guanidinyl groups, substituted and unsubstituted primary, secondary, and tertiary/alkyl groups, substituted and unsubstituted aryl groups, substituted and unsubstituted alkenyl groups, substituted and unsubstituted alkynyl groups, substituted and unsubstituted heterocyclyl groups, substituted and unsubstituted alkylaminoalkyl groups, substituted and unsubstituted dialkylaminoalkyl groups, substituted and unsubstituted arylaminoalkyl groups, substituted and unsubstituted diarylaminoalkyl groups, substituted and unsubstituted (alkyl)(aryl)aminoalkyl/groups, substituted and unsubstituted heterocyclylalkyl groups, substituted and unsubstituted aminoalkyl groups, substituted and unsubstituted heterocyclylaminoalkyl groups, substituted and unsubstituted diheterocyclylaminoalkyl groups, substituted and unsubstituted (alkyl)(heterocyclyl)aminoalkyl groups, substituted and unsubstituted (aryl)(heterocyclyl)aminoalkyl groups, substituted and unsubstituted hydroxyalkyl groups, substituted and unsubstituted alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl groups, and substituted and unsubstituted heterocyclyloxyalkyl groups;

 $R^8$  is selected from the group consisting of substituted and unsubstituted alkyl groups, substituted and unsubstituted and unsubstituted and unsubstituted and unsubstituted heterocyclyl groups, substituted and unsubstituted heterocyclylalkyl groups, -C(=O)H, -C(=O)-alkyl groups, -C(=O)-aryl groups, -C(=O)O-aryl groups, -C(=O)O-aryl

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72	groups, $-C(=O)NH_2$ , $-C(=O)NH(alkyl)$ groups, $-C(=O)NH(aryl)$
73	groups, -C(=O)N(alkyl)2 groups, -C(=O)N(aryl)2 groups,
74	-C(=O)N(alkyl)(aryl) groups, -NH <sub>2</sub> , -NH(akyl) groups, -NH(aryl)
75	groups, -N(alkyl)2 groups, -N(alkyl)(aryl) groups, -N(aryl)2 groups,
76	$-C(=O)NH(heterocyclyl)$ groups, $-C(=O)N(heterocyclyl)_2$ groups,
<b>77</b> .	-C(=O)N(alkyl)(heterocyclyl) groups, and
78	-C(=O)N(aryl)(heterocyclyl) groups;
79	R <sup>9</sup> and R <sup>18</sup> may be the same or different and are independently
80	selected from the group consisting of substituted and unsubstituted
81	alkyl groups, and substituted and unsubstituted aryl groups;
82	R <sup>10</sup> is selected from the group consisting of H, substituted and
83	unsubstituted alkyl groups, substituted and unsubstituted aryl groups,
84	and substituted and unsubstituted heterocyclyl groups;
85	R <sup>11</sup> is selected from the group consisting of H, substituted and
86	unsubstituted alkyl groups, substituted and unsubstituted aryl groups,
87	substituted and unsubstituted heterocyclyl groups, -OH, alkoxy
88	groups, aryloxy groups, -NH <sub>2</sub> , substituted and unsubstituted
89	heterocyclylalkyl groups, substituted and unsubstituted aminoalkyl
90	groups, substituted and unsubstituted alkylaminoalkyl groups,
91	substituted and unsubstituted dialkylaminoalkyl groups, substituted
92	and unsubstituted arylaminoalkyl groups, substituted and
93	unsubstituted diarylaminoalkyl groups, substituted and unsubstituted
94	(alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted
95	alkylamino groups, substituted and unsubstituted arylamino groups,

substituted and unsubstituted dialkylamino groups, substituted and

unsubstituted diarylamino groups, substituted and unsubstituted

(alkyl)(aryl)amino groups, -C(=O)H, -C(=O)-alkyl groups,

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99	-C(=O)-aryl groups, $-C(=O)O$ -alkyl groups/ $-C(=O)O$ -aryl groups,
100	$-C(=O)NH_2$ , $-C(=O)NH(alkyl)$ groups, $-C(=O)NH(aryl)$ groups,
101	$-C(=O)N(alkyl)_2$ groups, $-C(=O)N(aryl)_2$ groups,
102	-C(=O)N(alkyl)(aryl) groups, $-C(=O)$ -deterocyclyl groups,
103	-C(=O)-O-heterocyclyl groups, -C(= $\phi$ )NH(heterocyclyl) groups,
104	$-C(=O)-N(heterocyclyl)_2$ groups, $-C(=O)-N(alkyl)(heterocyclyl)$
105	groups, -C(=O)-N(aryl)(heterocyclyl) groups, substituted and
106	unsubstituted heterocyclylaminoalkyl groups, substituted and
107	unsubstituted diheterocyclylaminoalkyl groups, substituted and
108	unsubstituted (alkyl)(heterocyclyl)aminoalkyl groups, substituted and
109	unsubstituted (aryl)(heterocyclyl)aminoalkyl groups, substituted and
110	unsubstituted hydroxyalkyl groups, substituted and unsubstituted
111	alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl
112	groups, and substituted and unsubstituted heterocyclyloxyalkyl
113	groups;
114	R <sup>12</sup> is selected from the group consisting of H, -OH, alkoxy groups,
115	aryloxy groups, -NH <sub>2</sub> , -NH(alkyl) groups, -NH(aryl) groups,
116	-N(alkyl)2 groups, /N(aryl)2 groups, -N(alkyl)(aryl) groups,
117	substituted and unsubstituted alkyl groups, substituted and
118	unsubstituted ary groups, -NH(heterocyclyl) groups,
119	-N(heterocyclyl) groups, -N(alkyl)(heterocyclyl) groups, and
120	-N(aryl)(heterocyclyl) groups;
121	R <sup>14</sup> is selected from the group consisting of substituted and
122	unsubstituted alkyl groups, substituted and unsubstituted aryl groups,
123	substituted and unsubstituted heterocyclyl groups, substituted and
124	unsubstituted heterocyclylalkyl groups, $-C(=O)H$ , $-C(=O)$ -alkyl
125	groups, $-C(=O)$ -aryl groups, $-C(=O)$ -heterocyclyl groups,
126	$-C(=O)NH_2$ , $-C(=O)NH(alkyl)$ groups, $-C(=O)NH(aryl)$ groups,

 $-C(=O)N(alkyl)_2$  groups,  $-C(=O)N(ary)_2$  groups,

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	128	-C(=O)N(alkyl)(aryl) groups, -C(=O)NH-heterocyclyl groups,
	129	-C(=O)N-(heterocyclyl) <sub>2</sub> groups, -C(=O)N(alkyl)(heterocyclyl)
	130	groups, -C(=O)N(aryl)(heterocycly) groups, substituted and
	131	unsubstituted aminoalkyl groups, sybstituted and unsubstituted
	132	alkylaminoalkyl groups, substituted and unsubstituted
	133	dialkylaminoalkyl groups, substituted and unsubstituted
	134	arylaminoalkyl groups, substituted and unsubstituted
	135	diarylaminoalkyl groups, substituted and unsubstituted
Lj	136	(alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted
il il	137	heterocyclylaminoalkyl groups, substituted and unsubstituted
կարի կարի իրկ այր այր կարի այր կարի այր իրկ վարի այր կարի կարի այր կարի կարի այր կարի այր կարի այր կարի այր կար	138	diheterocyclylaminoalkyl groups, substituted and unsubstituted
	139	(heterocyclyl)(alkyl)aminoalkyl groups, substituted and unsubstituted
	140	(heterocyclyl)(aryl)aminoalkyl groups, substituted and unsubstituted
	141	alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl
	142	groups, substituted and unsubstituted hydroxyalkyl groups, and
	143	substituted and unsubstituted heterocyclyloxyalkyl groups;
	144	R <sup>15</sup> is selected from the group consisting of H, substituted and
	145	unsubstituted alky groups, substituted and unsubstituted aryl groups,
	146	and substituted and unsubstituted heterocyclyl groups;
	147	R <sup>16</sup> is selected from the group consisting of H, substituted and
	148	unsubstituted alkyl groups, substituted and unsubstituted aryl groups,
	149	substituted and unsubstituted heterocyclyl groups, -C(=O)H,
	150	$-C(=O)$ -alkyl groups, $-C(=O)$ -aryl groups, $-C(=O)NH_2$ ,
	151	-C(=O)NH (alkyl) groups, $-C(=O)NH$ (aryl) groups,
	152	-C(=O)N(alkyl)2 groups, -C(=O)N(aryl)2 groups,
	153	-C(=O)N(alkyl)(aryl) groups, -C(=O)O-alkyl groups,
	154	-C(=O)O-aryl groups, substituted and unsubstituted aminoalkyl
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155	groups, substituted and unsubstituted alkylaminoalkyl groups,
156	substituted and unsubstituted dialkylam noalkyl groups, substituted
157	and unsubstituted arylaminoalkyl groups, substituted and
158	unsubstituted diarylaminoalkyl groups, substituted and unsubstituted
159	(alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted
160	heterocyclylalkyl groups, -C(=O)-heterocyclyl groups,
161	-C(=O)-O-heterocyclyl groups, - $\phi$ (=O)NH(heterocyclyl) groups,
162	$-C(=O)-N(heterocyclyl)_2 groups / -C(=O)-N(alkyl)(heterocyclyl)$
163	groups, -C(=O)-N(aryl)(heterocyclyl) groups, substituted and
164	unsubstituted heterocyclylamin alkyl groups, substituted and
165	unsubstituted diheterocyclylaminoalkyl groups, substituted and
166	unsubstituted (heterocyclyl)(akyl)aminoalkyl groups, substituted and
167	unsubstituted (heterocyclyl)(aryl)aminoalkyl groups, substituted and
168	unsubstituted hydroxyalkyl groups, substituted and unsubstituted
169	alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl
170	groups, and substituted and unsubstituted heterocyclyloxyalkyl
171	groups; and
172	R <sup>17</sup> , R <sup>19</sup> , and R <sup>20</sup> may be the same or different and are independently
173	selected from the group consisting of H, -NH2, -NH(alkyl) groups,
174	-NH(aryl) groups, -N(alkyl)2 groups, -N(aryl)2 groups,
175	-N(alkyl)(aryl) groups, -NH(heterocyclyl) groups,
176	-N(heterocyclyl)(a/kyl) groups, -N(heterocyclyl)(aryl) groups,
177	-N(heterocyclyl)2 groups, substituted and unsubstituted alkyl groups,
178	substituted and unsubstituted aryl groups, -OH, substituted and
179	unsubstituted alkoxy groups, substituted and unsubstituted
180	heterocyclyl groups, substituted and unsubstituted aryloxy groups,
181	heterocyclyloxy groups, -NHOH, -N(alkyl)OH groups, -N(aryl)OH
182	groups, -N(akyl)O-alkyl groups, -N(aryl)O-alkyl groups,
183	-N(alkyl)O-aryl groups, and -N(aryl)O-aryl groups.
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1	2. The compound according to claim 1, wherein Y is selected
2	from the group consisting of $-QH$ , $-OR^8$ groups, and $-NR^{10}R^{11}$ groups.
1	3. The compound according to claim 1, wherein Y is a -NR <sup>10</sup> R <sup>1</sup>
2	group.
1	4. The compound according to claim 1, wherein Z is an NR <sup>13</sup>
2	group.
1	5. The compound according claim 1, wherein R <sup>4</sup> and R <sup>7</sup> are
2	hydrogen and R <sup>5</sup> and R <sup>6</sup> are selected from the group consisting of hydrogen and
3	alkyl groups having from 1 to 4 carbon atoms.
1	6. The compound according to claim 1, wherein $R^5$ or $R^6$ is an
2	-OR <sup>14</sup> group and R <sup>14</sup> is an alkyl, aryl, heterocyclyl, or heterocyclylalkyl group.
1	7. The compound according to claim 1, wherein $R^5$ or $R^6$ is a
2	-OCH <sub>2</sub> (CH <sub>2</sub> ) <sub>q</sub> (heterocyclyl) group and q is 0, 1, 2, 3, or 4.
1	8. The compound according to claim 1, wherein $R^{17}$ is selected
2	from the group consisting of substituted and unsubstituted alkyl groups, substituted
3	and unsubstituted aryl groups, -NH2, -NH(alkyl) groups, -N(alkyl)2 groups,
4	-NH(aryl) groups, -N(aryl)2 groups, -N(alkyl)(aryl) groups, -NH(heterocyclyl)
5	groups, -N(heterocyclyl)(alkyl) groups, -N(heterocyclyl)(aryl) groups,
6	-N(heterocyclyl)2 groups, and N-containing heterocycles, wherein the N-containing
7	heterocycles are bonded to the carbonyl carbon of the $-C(=O)-R^{17}$ group through
8	either a nitrogen atom or a carbon atom in the rings of the N-containing
9	heterocycles.

- A compound having the structure III, a tautomer of the 1 9.
- compound, a pharmaceutically acceptable salt of the compound, or a 2
- pharmaceutically acceptable salt of the tautomer 3

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W<sup>1</sup>, W<sup>2</sup>, W<sup>3</sup>, and W<sup>4</sup> are selected from C or N, and at least one of

wherein,

 $W^{1}$ ,  $W^{2}$ ,  $W^{3}$ , or  $W^{4}$  is N;

 $X^1$ ,  $X^2$ ,  $X^3$ , and  $X^4$  are selected from C or N, and at least one of  $X^1$ ,

 $X^2$ ,  $X^3$ , or  $X^4$  is N;

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Y is selected from the group consisting of H,  $-\dot{Q}H$ ,  $-OR^{10}$  groups, -SH, -SR<sup>11</sup> groups, -NR<sup>12</sup>R<sup>13</sup> groups, -CN, -C(=0)-R<sup>14</sup> groups, substituted and unsubstituted alkyl groups, substituted and unsubstituted alkenyl groups, substituted and unsubstituted alkynyl groups, substituted and unsubstituted aralkyl groups, substituted and unsubstituted heterocyclylalkyl groups, substituted and unsubstituted alkylaminoalkyl groups, substituted and unsubstituted dialkylaminoalkyl groups, substituted and unsubstituted arylaminoalkyl groups, substituted and unsubstituted

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46 47 diarylaminoalkyl groups, substituted and unsubstituted (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted heterocyclylaminoalkyl groups, substituted and unsubstituted diheterocyclylaminoalkyl groups, substituted and unsubstituted (heterocyclyl)(alkyl)aminoalkyl groups, substituted and unsubstituted (heterocyclyl)(aryl)aminoalkyl groups, substituted and unsubstituted heterocyclyl groups, substituted and unsubstituted heterocyclyloxyalkyl groups, and substituted and unsubstituted heterocyclyloxyalkyl groups;

R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, and R<sup>8</sup> may be the same or different and are independently selected from the group consisting of H, Cl, Br, F, I, -NO<sub>2</sub>, -CN, -OH, -OR<sup>15</sup> groups, -NR<sup>16</sup>R<sup>17</sup> groups, -C(=O)R<sup>18</sup> groups, -SH, -SR<sup>19</sup> groups, -S( $\stackrel{\downarrow}{=}$ O)R<sup>20</sup> groups, S(=O)<sub>2</sub>R<sup>21</sup> groups, substituted and unsubstituted amidinyl groups, substituted and unsubstituted guanidinyl groups, substituted and unsubstituted primary, secondary, and tertiary alkyl groups, substituted and unsubstituted aryl groups, substituted and unsubstituted alkenyl groups, substituted and unsubstituted alkynyl groups, substituted and unsubstituted heterocyclyl groups, substituted and unsubstituted alkylaminoalkyl groups, substituted and unsubstituted dialkylaminoalkyl groups, substituted and unsubstituted arylaminoalkyl groups, substituted and unsubstituted diarylaminoalkyl groups, substituted and unsubstituted (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted heterocyclylalkyl groups, substituted and unsubstituted aminoalkyl groups, substituted and unsubstituted heterocyclylaminoalkyl groups, substituted and unsubstituted diheterocyclylaminoalkyl groups,

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48	substituted and unsubstituted (alkyl)(heterocyclyl)aminoalkyl groups,
49	substituted and unsubstituted (aryl)(heterocyclyl)aminoalkyl groups,
50	substituted and unsubstituted hydroxyalkyl groups, substituted and
51	unsubstituted alkoxyalkyl groups, substituted and unsubstituted
52	aryloxyalkyl groups, and substituted and unsubstituted
53	heterocyclyloxyalkyl groups, and R <sup>1</sup> , R <sup>2</sup> , R <sup>3</sup> , R <sup>4</sup> , R <sup>5</sup> , R <sup>6</sup> , R <sup>7</sup> , and R <sup>8</sup>
54	may be absent;
55	$R^1$ is absent or H if $W^1$ is N;
56	R <sup>2</sup> is absent or H if W <sup>2</sup> is N
57	R <sup>3</sup> is absent or H if W <sup>3</sup> is N;
58	R <sup>4</sup> is absent or H if W <sup>4</sup> is N;
59	$R^5$ is absent or H if $X^1$ is N;
60	$\mathbb{R}^6$ is absent or H if $\mathbb{X}^2$ is N;
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61	$\mathbb{R}^7$ is absent or H if $\mathbb{X}^3$ is $\mathbb{N}$ ;
62	$R^8$ is absent or H if $X^4$ is N;
02	K is absent of II if X is iv,
63	R <sup>9</sup> is selected from the group consisting of H, -OH, substituted and
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65	unsubstituted alkoxy groups, substituted and unsubstituted aryloxy
	groups, -NH <sub>2</sub> , substituted and unsubstituted alkylamino groups,
66	substituted and unsubstituted arylamino groups, substituted and

unsubstituted dialkylamino groups, substituted and unsubstituted

68	diarylamino groups, substituted and unsubstituted (alkyl)(aryl)amino
69	groups, substituted and unsubstituted alkyl groups, substituted and
70	unsubstituted aryl groups, $-C(=O)$ -alkyl groups, and
71	-C(=O)-aryl groups;
72	R <sup>10</sup> is selected from the group consisting of substituted and
73	unsubstituted alkyl groups, substituted and unsubstituted aryl groups,
74	substituted and unsubstituted heterocyclyl groups, substituted and
75	unsubstituted heterocyclylalkyl groups, -C(=O)H, -C(=O)-alkyl
76	groups, $-C(=O)$ -aryl groups, $-C(=O)O$ -alkyl groups, $-C(=O)O$ -aryl
77	groups, $-C(=O)NH_2$ , $-C(=O)NH$ (alkyl) groups, $-C(=O)NH$ (aryl)
78	groups, -C(=O)N(alkyl)2 groups -C(=O)N(aryl)2 groups,
79	-C(=O)N(alkyl)(aryl) groups, -NH <sub>2</sub> , -NH(alkyl) groups, -NH(aryl)
80	groups, -N(alkyl)2 groups, -N(alkyl)(aryl) groups, -N(aryl)2 groups,
81	$-C(=O)NH(heterocyclyl)$ groups, $-C(=O)N(heterocyclyl)_2$ groups,
82	-C(=O)N(alkyl)(heterocyclyl) groups, and
83	-C(=O)N(aryl)(heterocyclyl) groups;
84	R <sup>11</sup> and R <sup>19</sup> may be the same or different and are independently
85	selected from the group consisting of substituted and unsubstituted
86	alkyl groups, and substituted and unsubstituted aryl groups;
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87	R <sup>12</sup> is selected from the group consisting of H, substituted and
88	unsubstituted alkyl groups, substituted and unsubstituted aryl groups,
89	and substituted and unsubstituted beterocyclyl groups;
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90	R <sup>13</sup> is selected from the group consisting of H, substituted and
91	unsubstituted alkyl groups, substituted and unsubstituted aryl groups,
92	substituted and unsubstituted heterocyclyl groups, -OH, alkoxy
93	groups, aryloxy groups, -NH <sub>2</sub> , substituted and unsubstituted

94	heterocyclylalkyl groups, substituted and unsubstituted aminoalkyl
95	groups, substituted and unsubstituted alkylaminoalkyl groups,
96	substituted and unsubstituted dialkylaminoalkyl groups, substituted
97	and unsubstituted arylaminoalkyl groups, substituted and
98	unsubstituted diarylaminoalkyl groups, substituted and unsubstituted
99	(alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted
100	alkylamino groups, substituted and unsubstituted arylamino groups,
101	substituted and unsubstituted dialkylamino groups, substituted and
102	unsubstituted diarylamino groups, substituted and unsubstituted
103	(alkyl)(aryl)amino groups, $-C(=O)H$ , $-C(=O)$ -alkyl groups,
104	-C(=O)-aryl groups, $-C(=O)$ O-alkyl groups, $-C(=O)$ O-aryl groups,
105	$-C(=O)NH_2$ , $-C(=O)NH(alkyl)$ groups, $-C(=O)NH(aryl)$ groups,
106	$-C(=O)N(alkyl)_2$ groups, $-C(=O)N(aryl)_2$ groups,
107	-C(=O)N(alkyl)(aryl) groups, -C(=O)-heterocyclyl groups,
108	-C(=O)-O-heterocyclyl groups, $-C(=O)NH$ (heterocyclyl) groups,
109	$-C(=O)-N(heterocyclyl)_2$ groups, $-C(=O)-N(alkyl)(heterocyclyl)$
110	groups, $-C(=O)-N(aryl)$ (heterocyclyl) groups, substituted and
111	unsubstituted heterocyclylamin oalkyl groups, substituted and
112	unsubstituted hydroxyalkyl groups, substituted and unsubstituted
113	alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl
114	groups, and substituted and unsubstituted heterocyclyloxyalkyl
115	groups;
116	R <sup>14</sup> is selected from the group consisting of H, -OH, alkoxy groups,
117	aryloxy groups, -NH2, -NH(alkyl) groups, -NH(aryl) groups,
118	-N(alkyl)2 groups, -N(aryl)2 groups, -N(alkyl)(aryl) groups,
119	substituted and unsubstituted alkyl groups, substituted and
120	unsubstituted aryl groups, -NH (heterocyclyl) groups,
121	-N(heterocyclyl)2 groups, -N(alkyl)(heterocyclyl) groups, and
122	-N(aryl)(heterocyclyl) groups;

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123	R <sup>15</sup> is selected from the group consisting of substituted and
124	unsubstituted alkyl groups, substituted and unsubstituted aryl groups,
125	substituted and unsubstituted heterocyclyl groups, substituted and
126	unsubstituted heterocyclylalky groups, $-C(=O)H$ , $-C(=O)$ -alkyl
127	groups, $-C(=O)$ -aryl groups, $-(C=O)$ -heterocyclyl groups,
128	$-C(=O)NH_2$ , $-C(=O)NH(alkyl)$ groups, $-C(=O)NH(aryl)$ groups,
129	$-C(=O)N(alkyl)_2$ groups, $-C(=O)N(aryl)_2$ groups,
130	-C(=O)N(alkyl)(aryl) groups, $-c(=O)NH$ -heterocyclyl groups,
131	$-C(=O)N-(heterocyclyl)_2$ groups, $-C(=O)N(alkyl)(heterocyclyl)$
132	groups, -C(=O)N(aryl)(heterocydlyl) groups, substituted and
133	unsubstituted aminoalkyl groups, substituted and unsubstituted
134	alkylaminoalkyl groups, substituted and unsubstituted
135	dialkylaminoalkyl groups, substituted and unsubstituted
136	arylaminoalkyl groups, substituted and unsubstituted
137	diarylaminoalkyl groups, substituted and unsubstituted
138	(alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted
139	heterocyclylaminoalkyl groups, substituted and unsubstituted
140	diheterocyclylaminoalkyl groups, substituted and unsubstituted
141	(heterocyclyl)(alkyl)aminoalkyl groups, substituted and unsubstituted
142	(heterocyclyl)(aryl)aminoalkyl groups, substituted and unsubstituted
143	alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl
144	groups, substituted and unsubstituted hydroxyalkyl groups, and
145	substituted and unsubstituted heterocyclyloxyalkyl groups;
146	R <sup>16</sup> is selected from the group consisting of H, substituted and
147	unsubstituted alkyl groups, substituted and unsubstituted aryl groups,
148	and substituted and unsubstituted heterodyclyl groups;
149	R <sup>17</sup> is selected from the group consisting of H, substituted and

unsubstituted alkyl groups, substituted and unsubstituted aryl groups,

151	substituted and unsubstituted heterocyclyl groups, -C(=O)H,
152	$-C(=O)$ -alkyl groups, $-C(=O)$ -aryl groups, $-C(=O)NH_2$ ,
153	-C(=O)NH(alkyl) groups, $-C(=O)NH(aryl)$ groups,
154	$-C(=O)N(alkyl)_2$ groups, $-C(=O)N(aryl)_2$ groups,
155	-C(=O)N(alkyl)(aryl) groups, -C(=O)O-alkyl groups,
156	-C(=O)O-aryl groups, substituted and unsubstituted aminoalkyl
157	groups, substituted and unsubstituted alkylaminoalkyl groups,
158	substituted and unsubstituted dialkylaminoalkyl groups, substituted
159	and unsubstituted arylaminoalkyl groups, substituted and
160	unsubstituted diarylaminoalky groups, substituted and unsubstituted
161	(aryl)(alkyl)aminoalkyl groups, substituted and unsubstituted
162	heterocyclylalkyl groups, $-C(\neq O)$ -heterocyclyl groups,
163	-C(=O)-O-heterocyclyl groups, -C(=O)NH(heterocyclyl) groups,
164	$-C(=O)-N(heterocyclyl)_2$ groups, $-C(=O)-N(alkyl)(heterocyclyl)$
165	groups, -C(=O)-N(aryl)(heterocyclyl) groups, substituted and
166	unsubstituted heterocyclylamin alkyl groups, substituted and
167	unsubstituted diheterocyclylaminoalkyl groups, substituted and
168	unsubstituted (heterocyclyl)(alkyl)aminoalkyl groups, substituted and
169	unsubstituted (heterocyclyl)(ary paminoalkyl groups, substituted and
170	unsubstituted hydroxyalkyl groups, substituted and unsubstituted
171	alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl
172	groups, and substituted and unsubstituted heterocyclyloxyalkyl
173	groups; and
174	$R^{18}$ , $R^{20}$ , and $R^{21}$ may be the same or different and are independently
175	selected from the group consisting of H, -NH2, -NH(alkyl) groups,
176	-NH(aryl) groups, -N(alkyl)2 groups, -N(aryl)2 groups,
177	-N(alkyl)(aryl) groups, -NH(heterocyclyl) groups,
178	-N(heterocyclyl)(alkyl) groups, -N(heterocyclyl)(aryl) groups,
179	-N(heterocyclyl)2 groups, substituted and unsubstituted alkyl groups,
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180	substituted and unsubstituted aryl groups, -OH, substituted and
181	unsubstituted alkoxy groups, substituted and unsubstituted
182	heterocyclyl groups, substituted and unsubstituted aryloxy groups,
183	heterocyclyloxy groups, -NHOH, -N(alkyl)OH groups, -N(aryl)OH
184	groups, -N(alkyl)O-alkyl groups, -N(aryl)O-alkyl groups,
185	-N(alkyl)O-aryl groups, and N(aryl)O-aryl groups.
1	10. The compound according to claim 9, wherein one of W <sup>1</sup> , W <sup>2</sup> ,
2	$W^3$ , and $W^4$ is N.
1	The compound according to claim 9, wherein one of $X^1$ , $X^2$ .
2	$X^3$ , and $X^4$ is N.
_	71, and 71 is iv.
1	12. The compound according to claim 9, wherein Y is selected
1.	from the group consisting of H, -OH, -OR <sup>10</sup> groups, and -NR <sup>12</sup> R <sup>13</sup> groups.
2	from the group consisting of H, -OH, -OK groups, and -NK K groups.
	12 Ti VI
1	13. The compound according to claim 9, wherein Y is a $-NR^{12}R^{13}$
2	group.
1	14. The compound according to claim 9, wherein R <sup>5</sup> is H, X <sup>4</sup> is
2	N, and R <sup>6</sup> and R <sup>7</sup> are selected from the group consisting of H and alkyl groups
3	having from one to four carbon atoms.
1	15. The compound according to claim 9, wherein R <sup>6</sup> or R <sup>7</sup> is an
2	-OR <sup>15</sup> group and R <sup>15</sup> is an alkyl, aryl, heterocyclyl, or heterocyclylalkyl group.
1	16. The compound according to claim 9, wherein $R^6$ or $R^7$ is a
2	-OCH <sub>2</sub> (CH <sub>2</sub> ) <sub>q</sub> (heterocyclyl) group and q is 0, 1, 2, 3, or 4.
	(,(,,,,,,
1	17. The compound according to claim 9, wherein R <sup>18</sup> is selected
2	from the group consisting of substituted and unsubstituted alkyl groups, substituted
3	and unsubstituted aryl groups, -NH2, -NH(alkyl) groups, -N(alkyl)2 groups,
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- 4 -NH(aryl) groups, -N(aryl)<sub>2</sub> groups, -N(alkyl)(aryl) groups, -NH(heterocyclyl) 5 groups, -N(heterocyclyl)(alkyl) groups, -N(heterocyclyl)(aryl) groups,
- 6 -N(heterocyclyl)2 groups, and N-containing heterocycles, wherein the N-containing
- 7 heterocycles are bonded to the calbonyl carbon of the  $-C(=O)-R^{18}$  group through
- 8 either a nitrogen atom or a carbon atom in the rings of the N-containing
- 9 heterocycles.
- 1 18. A pharmaceutical formulation, comprising the compound
- 2 . according to claim 1 in combination with a pharmaceutically acceptable carrier.
- 1 19. A method of treating a patient in need of an inhibitor of
- 2 vascular endothelial growth factor receptor tyrosine kinase, comprising
- 3 administering an effective amount of the pharmaceutical formulation according to
- 4 claim 18 to a patient in need thereof.
- 1 20. A pharmaceutical formulation, comprising the compound
- 2 according to claim 9 in combination with a pharmaceutically acceptable carrier.
- 1 21. A method of treating a patient in need of an inhibitor of
- 2 vascular endothelial growth factor receptor tyrosine kinase, comprising
- 3 administering an effective amount of the pharmaceutical formulation according to
- 4 claim 20 to a patient in need thereof.

